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Is Your MRI Safe? The Truth About Gadolinium

Unveiling the hidden risks of gadolinium, a common but controversial ingredient in MRI contrast dyes

PREMIUM FEATURED HEALTH CARE

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When Darla Torno entered the radiology suite for a routine MRI with contrast, she expected clarity. After all, she was about to undergo a scan for preventive measures, not due to any illness. The procedure required gadolinium, a standard imaging agent.

But in the weeks following the procedure, Ms. Torno's energy levels plummeted, a mysterious weakness crept into her muscles, and a cognitive fog settled over her. Within months, normalcy became a distant memory.

Initially dismissed, her symptoms eventually were traced back to an unexpected source: the very contrast dye used in her scan.

The Role of Gadolinium in Modern Medicine

Gadolinium, a dense rare-earth element categorized as a heavy metal, distinguishes itself from essential metals such as iron and zinc. Unlike these nutrients, it's absent from the human body, only making its way in through medical injections tailored for diagnostic purposes. Its role? To bring clarity to the MRI process.

When MRI machines cast powerful magnetic fields upon our body tissues, they rely on gadolinium's intrinsic magnetic properties. Gadolinium-based contrast agents enhance the distinction between healthy and diseased tissue. The outcome? Crisp, high-contrast images that, according to many doctors, are instrumental in making accurate diagnoses.

"Currently, there are a number of things you can only do with gadolinium contrast agents," Dr. Max Wintermark, chair of the Department of Neuroradiology at The University of Texas MD Anderson Cancer, told The Epoch Times. "Large studies have shown that approximately one-third of MRI studies are performed using contrast because of the additional, clinically relevant information provided by the contrast administration."

In 1988, gadopentetate dimeglumine (Magnevist) made its groundbreaking debut as the first MRI contrast dye. Since that seminal moment, eight additional chelates have been introduced to the medical world.

"Today, CE-MRI is a valuable and established diagnostic imaging tool worldwide, used annually in approximately 30 million procedures, with more than 300 million procedures performed to date," the authors of a 2016 study stated.

Red Flags

In the decades that followed FDA approval, researchers began sounding the alarm about gadolinium-based contrast agents (GBCA). Initially, these concerns emerged in patients with kidney diseases.

In 1998, a study uncovered gadolinium deposits in patients with kidney failure, with a quarter of the contrast dye untraced. Medical professionals curtailed the use of first-generation GBCAs among those with kidney issues, connecting it to nephrogenic systemic fibrosis. By 2004, evidence emerged that gadolinium could remain in the bones of even those with sound kidneys.

In the ensuing decade, troubling reports surfaced of gadolinium deposits discovered in the brain. Subsequent investigations reveal a haunting truth: once introduced into the bloodstream, gadolinium might linger in the human body for years or indefinitely, a sweeping concern that affects anyone who has undergone the procedure.

Dr. Richard Semelka, a distinguished radiologist with nearly 30 years of experience and an extensive bibliography of more than 370 peer-reviewed articles and 16 textbooks, spearheaded an initiative alongside other experts, coining the term "gadolinium deposition disease" (GDD) to categorize those affected by the condition.

Dr. Semelka's epiphany came through listening to his patients.

"The first three I saw, including a fellow doctor, described feeling sick post the GBCA injection at my center. One vividly recounted feeling as though her entire body was on fire," he said.

"Patients often report brain fog, a searing skin pain, and a distinct rib discomfort. Additional symptoms can range from tinnitus and vision shifts to cardiac arrhythmias," he told The Epoch Times. "These symptoms can manifest immediately or within a month of the GBCA injection. Their novelty to the patient is a crucial indicator."

Despite numerous studies claiming that gadolinium is safe, Dr. Semelka highlights the potential overlooked risks, suggesting that thorough follow-ups for symptoms consistent with GDD are often lacking. He reiterates the concern that gadolinium may linger in all individuals who undergo an MRI with contrast, particularly within the bones.

Complementing these concerns, emerging research indicates that gadolinium might reach our cellular level. A 2022 study suggests a link between GDD and disturbances in our mitochondria, the energy-producing organelles in our cells. This research discovered that the persisting symptoms seen in GDD patients bear striking similarities to those found in mitochondrial-related diseases. Research into gadolinium's potential impacts continues.

Patient Perspectives

As concerns over gadolinium grew, the voices of patients became louder. Online communities and forums began to spring up, where thousands of affected individuals shared their experiences and symptoms. One private Facebook group amassed more than 6,100 members. Many reported eerily similar symptoms.

One member of this group is Ms. Torno. The Spokane, Washington, resident always trusted the medical system, until a cascade of mysterious symptoms after a series of magnetic resonance imaging (MRI) scans turned her world upside down. A previously healthy woman, Ms. Torno has had seven MRI scans throughout her life, with four performed in a two-month span in 2019.

"My muscles started shrinking throughout my body, more on my left side. I also had severe muscle weakness, which I first noticed when I was removing a toothpaste cap."

She also suffered numbness that started on her face, had trouble swallowing, and couldn't tolerate places that didn't have good airflow.

Over the months, new symptoms continued to develop, she recalls. Despite dozens of visits to medical practitioners, her strange symptoms went undiagnosed, a dismissal that felt like a "gaslight," as her symptoms were attributed to anxiety and mental health issues.

Pursuing answers, Ms. Torno eventually sought out Dr. Semelka, whose diagnosis of GDD became a crucial turning point. He conducted a provoked heavy metal test that confirmed high levels of gadolinium.

This life-altering revelation transformed Ms. Torno's perspective on health care.

"They had me sign something right before taking me back but told me not to worry, it was just protocol and that the contrast was safe and would be out of my body within 48 hours," she recounted, highlighting the urgency for increased transparency and patient awareness.

Ms. Torno, once a master's-level social worker with three decades of experience, has seen her life unravel due to GDD. Her relationships, family home, and her career have all suffered. Everyday actions, from taking ibuprofen to dining out, pose challenges due to severe reactions and dietary restrictions from mast cell activation syndrome. Despite significant investments in varied treatments, her recovery remains an uphill battle, but one that she's determined to overcome.

National and Global Response

In the wake of escalating concerns about gadolinium-based contrast agents, regulators and manufacturers worldwide have taken action. In 2018, manufacturers conceded in a public letter that gadolinium is retained in all patients injected with the contrast dye, leaving its trace on the brain, bones, tissues, and organs.

"Gadolinium from gadolinium-based contrast agents (GBCAs) may remain in the body for months to years after the injection," a letter signed by top executives from Bayer, GE Healthcare, Bracco Diagnostics, and Guerbet expressly states. "The highest concentrations have been identified in the bone, followed by other organs (brain, skin, kidney, liver, and spleen)."

On the regulatory front, the U.S. Food and Drug Administration (FDA) issued a safety warning on Dec. 19, 2017, about the potential risks associated with using gadolinium.

"GBCAs are mostly eliminated from the body through the kidneys, however, trace amounts of gadolinium may stay in the body long-term," the warning reads.

"Health care professionals should consider the retention characteristics of each agent when choosing a GBCA for patients who may be at higher risk for gadolinium retention, including those requiring multiple lifetime doses, pregnant women, children, and patients with inflammatory conditions."

In 2018, European health authorities drew a clear line in the sand, withdrawing select linear versions of gadolinium-based contrast agents from circulation. This decisive measure from one of the world's key health care markets signaled a significant pivot in the approach to the unfolding gadolinium conundrum.

Questioning the Necessity of MRIs

The United States eclipses every developed country except Japan when it comes to MRI use, with a striking 40.4 MRI machines per million residents. Even so, such extensive access to and use of MRIs hasn't translated into superior health outcomes, raising concerns over potential overuse and associated health risks.

In an article published in the Journal of the American Medical Association, researchers from Stanford University and Mayo Clinic warned about the prevalence of "unnecessary diagnostic imaging" in the United States.

The team argues that despite the high usage rates—with yearly MRI scans standing at 118 per 1,000 people, triple the rate in Finland—there's "virtually no evidence" this translates into improved overall health for the population. This leads them to conclude that the U.S. health system might be experiencing a case of "wasted overuse" in medical imaging.

But the issue of over-imaging isn't just the waste—unnecessary scans may expose patients to other health risks.

"While information can be useful, too much information can create numerous problems," the physicians, Ohad Oren, Electron Kebebew, and John P.A. Ioannidis, argue.

"There is virtually no evidence that screening of this kind improves overall population health," they wrote.

Balancing Safety and MRI Practices

MRI has undeniably established itself as a crucial diagnostic tool in the medical landscape. However, the management of gadolinium toxicity, affecting a fraction of those exposed to GBCAs, remains a complex issue.

Addressing gadolinium toxicity presents a significant challenge. Central to any treatment approach is preventing further exposure to the harmful substance.

"The disease always becomes worse with each additional MRI with gadolinium, and ironically, these are often performed to investigate what turns out to be GDD itself," warns Dr. Semelka, emphasizing the crucial role of early detection in managing the condition. He underscores the deteriorating health trajectory of patients with each subsequent exposure to GBCA, underscoring the dire consequences of repeated exposures.

Chelation therapy, specifically with the FDA-approved chelator DTPA, is currently the most effective method to remove gadolinium from the body. Additional treatments may include sauna use (with caution), an anti-inflammatory diet, and supplements.

Dr. Semelka also notes that the risk is minimal for most patients.

"GBCAs are still safe for the majority of patients. Maybe only 1 in 10,000 develop GDD. Just because it is rare does not mean we should ignore it and hope it goes away," he said.

Dr. Semelka also stresses the vital role of transparency in health care, warning of the potential erosion of trust when adverse reactions are concealed.

"If patients believe that doctors are hiding or covering up adverse reactions to drugs or procedures, trust, which is already on shaky ground, will decrease further," he cautions.

Dr. Semelka also advocates for more thorough education and proactive patient screening. He calls for including pertinent questions about prior GBCA use and associated symptoms on MRI screening forms.

“I would like to see a change in regulations where all product inserts describe GDD and its symptoms,” he adds.

Such disclosures are necessary for informed consent and patients’ active participation in their health care journeys and are the responsibility of everyone involved in the MRI process—from the MRI technologists and radiologists to the referring physicians.

Patients must be informed about GDD symptoms and their potential onset following an MRI with gadolinium contrast.

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